

4 | DIY FRIDAY

ROCK-PAPER-SCISSORS

YOU NEED

Two steel nuts

Two long rubber bands

Top half of a plastic bottle with a hole pierced in the lid

A pair of scissors

1

Cut the rubber bands (as shown in pic).

2

Tie one end each of the rubber bands to a steel nut. Tie the other ends to the bottle lid.

3

Turn the bottle upside down and place the nuts as shown in the image. Drop the bottle from a certain height and ask a friend to catch it. You will see that the nuts have fallen inside the bottle.

4

The nuts fall inside because the assembly becomes weightless when in free fall, and the tension in the rubber bands pulls the nuts inside the bottle.

A one-litre plastic bottle filled with water

A balloon

Two paper clips

A ball-point pen

Balloon Fish

1

Draw a fish on the balloon with the pen.

2

Insert both the paper clips on the mouth of the balloon - this makes the balloon heavy. Ensure that the mouth of the balloon remains open.

3

Place the balloon in the water-filled bottled, making sure the fish floats. Then close the bottle with the lid.

4

On pressing the bottle, the fish will sink to the bottom.

5

On releasing the pressure, the fish will rise again.

External pressure pushes water into the balloon, making it heavy and so, it sinks.

CONCEPT: TOY INVENTOR ARVIND GUPTA
ILLUSTRATIONS: RESHMA BARVE & CHINMAYEE SAMANT
(www.arvindguptatoys.com)

CURIO SPACE

The Ghost Swing

What is Lorentz law? Recall your physics lesson, as you try out this experiment that is a practical application of what the Dutch physicist postulated

Let's Build !!

1. You will need : 1. A thermacole or such base 2. 1.5 volt battery 3. Wooden skewer stick 4. Doll cut out 5. 2nos pencils 6. A thick rectangular ferrite magnet 7. 1 bare copper rod 8. 2 sets of 1/2 metre thin bare copper wire.

2. Position the 1.5 battery & the rectangular ferrite magnet on the marked slots in the base.

3. Take the 2 sets of thin copper wire. Tightly wind one end of each wire around one end of the bare copper rod as shown. Ensure the copper rod and the copper wires around it have no insulation coating.

4. Firmly fix the 2 pencils into the base on either sides of the magnet in the marked slot. Position the wooden stick over the pencil heads as shown & glue it in place.

5. Position the bare copper rod just a little above the magnet. At the right length wind the copper wire at the two ends around the stick & the pencil as shown.

6. Extend each end of the copper wire to reach the terminal of the battery. Using tape stick one copper wire to the negative terminal of the battery. Ensure the copper wire part connected to the battery has no insulation coating. Stick the paper doll to the copper rod.

Let's Explore !!

7. Make a small loop around the end of the other copper wire. With this wire loop alternatively connect & disconnect to the positive terminal of the battery.

8. As you keep connecting & disconnecting the wire with the battery, an invisible force starts rocking the swing back & forth.

Science Behind the Scenes !!

Any current carrying conductor has a magnet field around it. The direction of this magnetic field depends on the direction of flow of current in the conductor.

When such a conductor is placed near a magnet, the magnetic field of the conductor & the magnetic field of the magnet could attract or repel each other.

Such attraction or repulsion causes an invisible force that makes the swing move back & forth. This force is called the Lorentz force, after the scientist who found about this.

PEN & PAPER

Why you should get it ‘write’

Well-formed handwriting is the platform for achievement in school and at the workplace. If you are keen on mastering the art of fine writing, these worksheets will benefit you...

Priti Govindaraj (www.pritis-ecademy.com)

Life on the planet depends on the presence of the sun.

No plants, animals, human beings would have been around without the sun.

(The writer runs Pritis-ecademy which offers online courses, e-learning videos and mobile apps to improve handwriting skills for all age groups.)